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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

OFFICIAL

Appl.No.:	09/668,398
Appellant:	McCree
Filed:	September 22, 2000
TC/A.U.	2655
Examiner:	Nolan

Confirmation No.: 2360

Docket No.:	TI-29490
Cust.No.:	23494

APPELLANT'S BRIEF (in triplicate)

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 192(c) items of appellant's brief. Further, appellant requests an extension of time in which to respond. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal, the fee for the extension of time, plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,

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Rule 192(c)(1) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 192(c)(2) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 192(c)(3) Status of claims

Claims 1-5 are pending in the application with claims 3 and 5 objected to and claims 1-2 and 4 finally rejected. This appeal involves the finally rejected claims.

Rule 192(c)(4) Status of amendments

There is no amendment after final rejection.

Rule 192(c)(5) Summary of the invention

The invention provides a method of encoding digital speech using the linear prediction (LP) method. Fig.1a shows encoder functional blocks; and the invention deals with LP parameters (including LP coefficients) extracted in the Linear Prediction Analysis (left portion of Fig.1a) and used in the Analysis by Synthesis (lower right portion) to generate the excitation waveform. In particular, the invention provides updating the LP coefficients within sub-frames instead of the known methods of using constant LP coefficients for a sub-frame when finding the waveform which determines CELP parameters. Application pages 31-32 describe the LP coefficient updating: first full paragraph on page 31 states the problem, and the next paragraph (bridging pages 31-32) describes preferred embodiment methods. The remainder of page 32 recapitulates this.

Rule 192(c)(6) Issues

The issues presented on appeal are:

(1) whether claim 1 is patentable over the Thyssen reference in view of the Kim reference.

(2) whether claim 2 is patentable over the Thyssen reference in view of the Kim and Nomura references.

(3) whether claim 4 is anticipated by the Serizawa reference.

Rule 192(c)(7) Grouping of the claims

The three claims are treated separately.

Rule 192(c)(8) Argument

(1) Claim 1 was rejected as unpatentable over Thyssen in view of Kim; the Examiner cited Thyssen column 9, lines 58-65 for the feature of updating LP coefficients within a sub-frame.

Appellant replies that Thyssen column 9, lines 58-65 does not suggest updating LP coefficients within a sub-frame of the waveform coder; rather, the filter updating in Thyssen (column 9, line 62) is the filter memory, not the filter coefficients. Indeed, Thyssen updates the filter coefficients less frequently than the excitation sub-frame: Table 1 (spanning columns 9-10) entry line 12 indicates an excitation of 31 bits every sub-frame but 4 sub-frames per frame and only one LSF quantization of 28 bits and one LPC interpolation of 2 bits (Table 1 entry lines 6-7) per frame. This is contrary to the requirement of claim 1, and consequently, claim 1 is not suggested by the references.

(2) Claim 2 was rejected as unpatentable over Thyssen in view of Kim and Nomura; the Examiner applied Thyssen and Kim as in argument (2) and added Nomura for sub-frame lengths.

Appellant relies upon the patentability of parent claim 1: claim 2 depends from claim 1.

(3) Claim 4 was rejected as anticipated by Serizawa. The Examiner cited column 1, lines 26-32 and column 11, lines 22-24 for a plurality of sets of LP coefficients for each sub-frame as required by claim 4, clause (b); and column 2, lines 38-60 and column 8, lines 17-20 for finding waveform excitation using these LP coefficients as required by claim 4, clause (c).

Appellant replies that with respect to claim 4, clause (b) Serizawa column 1, lines 26-32 recites "frame characteristic parameters include coefficients of a linear prediction (LP) synthesis filter, ... The sub-frame characteristic parameters include a lag of a pitch ...". And column 11, lines 22-24 recite "... the backward analyzer 31 stores the reproduced excitation signal from the backward filter 10 in the past sub-frames and calculates the backward linear prediction coefficients b indicative of the fine spectral distribution from the stored reproduced excitation signals."

Thus, Serizawa has LP synthesis coefficients for a frame and backward LP coefficients b for a sub-frame.

And with regard to claim 4, clause (c), Serizawa column 2, lines 38-60 recites "... excitation code book circuit ... of code vectors each of sub-frame length ... A backward filter (BWF) 10 obtains a reproduced excitation candidate signals by filtering ... using backward linear prediction coefficients b supplied from the backward analyzer 34." And column 8, lines 17-20 recites "The excitation code book ... code vectors of sub-frame length, ..., and outputs the code vectors sequentially according to the indices supplied from the error evaluation circuit 14."

Thus Serizawa uses the sub-frame backward LP coefficients b to generate the reproduced excitation candidate signals but apparently not two sets of sub-frame LP coefficients or even the frame-level LP synthesis coefficients. Consequently, Serizawa does not anticipate claim 4.

Rule 192(c)(9) Appendix

1. A speech encoder, comprising:

(a) a linear prediction, pitch, and, voicing analyzer;

(b) a waveform coder coupled to said analyzer, with LP coefficients updated within a sub-frame for excitation synthesis.

2. The speech encoder of claim 1, wherein:

(a) said sub-frame has a length equal to an integer multiple of a length of an interval of said LP coefficients update.

4. A method of speech encoding, comprising the steps of:

(a) providing waveform excitation sub-frames;

(b) providing a plurality of sets of LP coefficients for each of said sub-frames; and

(c) finding waveform excitations for said sub-frames using said sets of LP coefficients.